A Surgical Approach to Achalasia of the Esophagus

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A Surgical Approach to Achalasia of the Esophagus

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Introduction

A multiplicity of surgical procedures of esophageal achalasia are currently used and there is a variety of informations about the merits and demerits of each technique in relation to the patient's condition or the stage of the disease.

Either the HELLER's myotomy in the esophagogastric junction or esophagocardioplasty with a gastric patch has been performed at our clinic. The HELLER's myotomy has been widely used as a simple and safe treatment. However, a higher incidence of reflux esophagitis has been reported unless some kinds of antireflux maneuvers were added[1].

Esophagocardioplasty with a gastric patch transplanted into the lower esophagus is accompanied with a risk of anastomotic insufficiency and may carry a chance of reflux due to impairment of the sphincter muscle[2]. A technique of a long myectomy starting on the distal esophagus and extending to the level of the inferior pulmonary vein without any antireflux procedures has been performed since 1982. This paper represents the preoperative assessment in patients, the surgical technique, and the results after the operation.

Preoperative Assessment

Five patients with achalasia were treated by this surgical method. Their ages ranged from 26 to 57 years, with an average of 39 years. The duration of ailment varied from 1 year to 16 years, with a median of 7 years (Table I).

The severity of the disease was classified according to the criteria established by the Japanese Esophageal Disease Society[3]. The obtained forms on X-ray pictures were divided into three types: the spindle (SP), flask (F), and sigmoid (S) type. When the largest diameter of the esophagus was less than 3.5 cm, the patient was categolized as grade I, between 3.5 and 6 cm, as Grade II, and more than 6 cm, as Grade III. Two patients were classified as SP., two, F.,

Key words: Achalasia, Long Myectomy, Lower Esophageal Sphincter Pressure.
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Table I. Preoperative Assessment of Patients of Achalasia

No	Age (yrs)	Sex	Duration of symptoms (yrs)	Form	Diameter of Esophagus (cm)	Grade
1	57	m	4	Sp	4.5	II
2	52	f	16	F	7.0	III
3	30	m	1	F	7.0	III
4	27	f	1	Sp	5.0	II
5	30	m	13	S	6.0	III

Sp. spindle type
F flask type
S sigmoid type

and one, S.

According to the criteria of the caliber, two patients were classified as Grade II, and 3, as Grade III. One female patient (case No. 2) underwent an operation of an unknown method approximately 16 years ago. After surgery, she developed dysphagia to the same extent as the preoperative one and has been left untreated 15 years. The other patients has not undergone any medical treatment before the operation. Manometric evaluation was performed according to the method of DODD[4] using a single catheter assembly consisting of three fluid-filled, perfused polyethylene tubes bonded together with three 2 mm lateral openings placed 5 cm. apart at its distal end. Lower esophageal sphincter pressure (LESP) was measured as the difference in mm. of Hg. between mean resting gastric pressure and mean resting sphincter pressure. The results of LESP before the operation are shown in Table II. Preoperative manometric study could not be performed in the patient of No. 2, because a catheter could not be passed through the distal esophagus.

Operative Technique

After a patient is placed in the right oblique lateral position, thoracotomy is done through the left seventh rib. The left costal margin is resected by about 2 cm. at the junction of the seventh rib, so that a wider operative field is obtained in the left thoracic cavity. After the mediastinal pleura is incised at the lower esophagus, the organ is gently mobilized anteriorly with the vagal

Table II. Difference of Pressures of the Lower Esophageal Sphincter between Before and After Operation

No	Age (yrs)	LESP (mm Hg)	
		Preope.	postope.
1	57	25.0	9.0
2	52	?	6.0
3	30	20.0	12.0
4	27	40.0	12.0
5	30	36.0	8.0

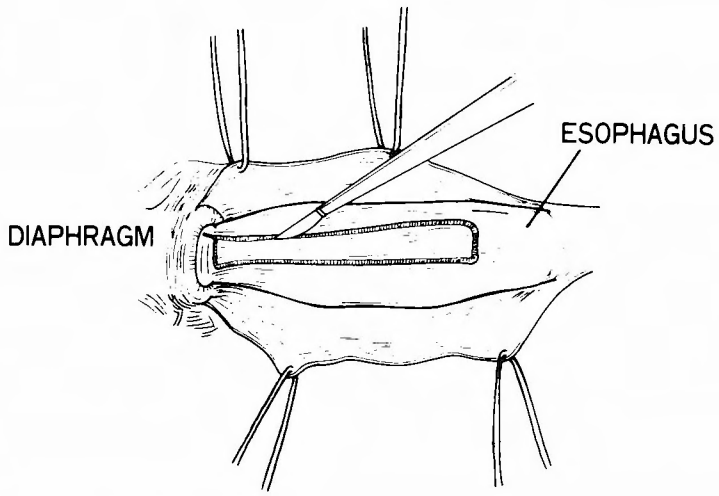
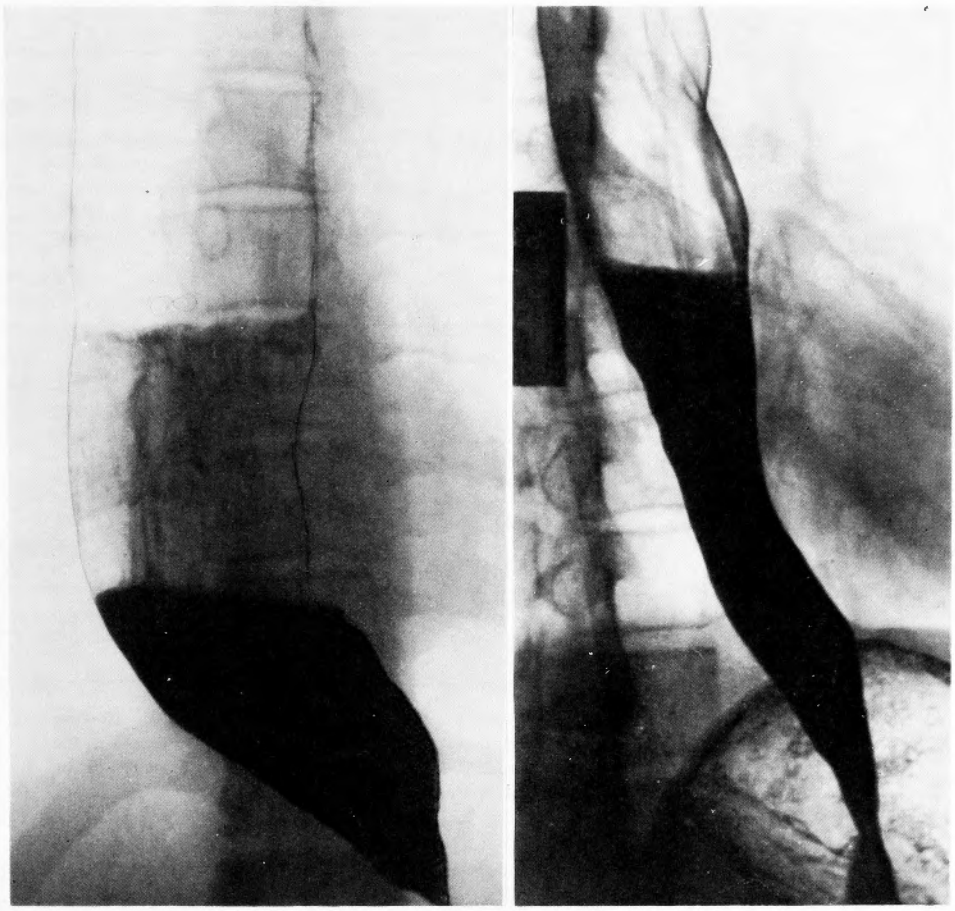


Fig. 1. A long esophago-myectomy.
The circular muscle of the distal end of the esophagus is divided completely. A long myectomy starting on the distal esophagus and extending to the level of the inferior pulmonary vein is done.
(A rectangular muscle strip indicated by the fine dots is resected.)

nerves and the right pleura preserved. A longitudinal incision is made on the right anteromedian muscle layer of the esophagus; the nearer the incision is placed to the lesser curvature of the stomach, the better the antireflux mechanism is preserved. The circular muscle of the distal end of the esophagus is split completely. Care should be taken to avoid overmyotomy to the cardia and damage to the phrenoesophageal ligament. The incision is extended proximally onto the level of the esophagus at the inferior pulmonary vein. An incision parallel with the myotomy is placed along by 1 cm. laterally. The distal end should be kept in a lower esophageal region, not in the muscle ring of the sphincter. A rectangular muscle strip measuring about 1 by 12 to 13 cm. is resected (Fig. 1). It results in protrusion by a half or more of the circumference of the esophageal mucosa. Complete hemostasis on the surface of the mucosa is essential. The esophagogastric junction is returned to the abdominal cavity through the hiatus after replacement of the esophagus into the posterior mediastinum. The mediastinal pleura is closed with interrupted sutures and the chest is closed with a drainage tube indwelt.

Results

There were neither complications nor deaths in the hospital after the operation. All patients were completely free from dysphagia and had no symptom from gastroesphageal reflux after the surgical management. A typical radiographic apperance before and after the long myectomy is shown in Figure 2. They were all discharged within one month. The LESP was measured between one month and one year after the operation. The results of LESP after the operation are shown in Table II. An example of a manometric study before and after the operation is shown in Figure 3. In all the patients, the pressure in the LES decreased to the normal range



A B

Fig. 2. Roentgenogram of the esophagus before (A) and three weeks after (B) long esophagomyectomy for achalasia.

postoperatively and no reflux was observed at all symptomatically and endoscopically.

Discussion

According to ELLIS et al, excellent or good results were achieved in 84% of the patients after the simple longitudinal myotomy for achalasia of the esophagus[5].

The features of this surgical approach to the disease are the incision extended proximally onto the muscle at the level of the inferior pulmonary vein and resection of a long strip of the esophageal muscle. Exicision of the long muscle strip is absolutely preventive of reapproximation between the resected edges. The operation is more effective by resection of long dysganglionic segment of the esophagus than in the treatment of HELLER. The ganglion cells disappeared or degenerated at the proximal end of the muscle of the esophagus[6]. An analysis of postoperative symptoms after the modified HELLER's method showed a high incidence of reflux[1]. Therefore,

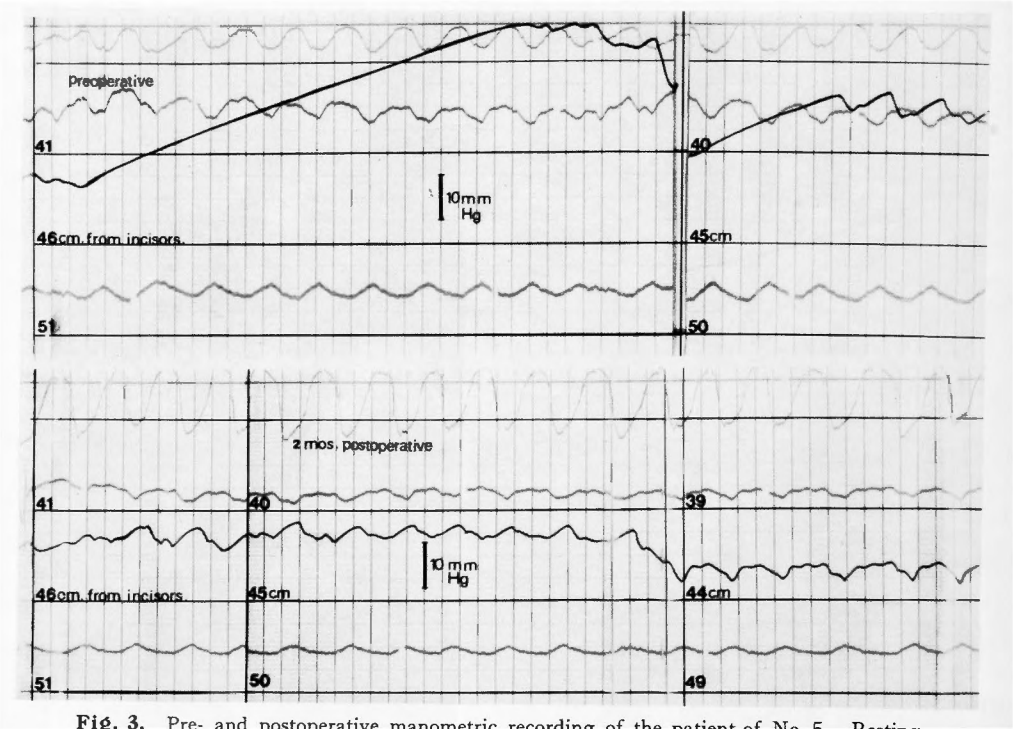


Fig. 3. Pre- and postoperative manometric recording of the patient of No. 5. Resting pressures at lower esophageal sphincter (45–46 cm. from incisors) decreased to the normal range after the operation. Diminution in amplitude of pressure in the thoracic esophagus was also achieved postoperatively.

an antireflux operation or a complementary vagotomy is recommended to minimize subsequent acid reflux[1,7]. However, the undesirable side effects correlates with plurality of incision on the LES region and the length of incision to the stomach[8]. As far as the LESP is within normal range to allow ingested food to pass readily into the stomach but not so much as to allow gastro-esophageal reflux, no antireflux maneuver is necessary[8].

Summary

The operative technique for achalasia brought about excellent results in 5 patients, especially of its advanced stages. The features of this surgery are the incision starting on the circular muscle of the distal end of the esophagus, extending to the level of the inferior pulmonary vein, and resection of a long strip of the muscle without any antireflux maneuver under the left thoracotomy. The present study suggests that this method should deserve of choice for the treatment of the disease, especially in its advanced stages. As the postoperative duration under review was not so long enough to evaluate, the long-term follow-up studies should be continued until five or ten years after the operation.

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和文抄録

食道アカラシアに対する外科的治療の試み

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白　羽　　誠

食道アカラシアに対する手術的治療には，実にさまざまの方法が報告されている．それらには各々一長一短があり，逆に云うならば，いかに食道運動機能不全を正常に回復させることが容易でないことを物語っている．本症に対する外科治療は，①食道胃接合部の食物通過を確実に円滑にさせる，②胃内容が食道へ逆流しない，③手術が複雑でなく，安全に行える，④術後再発や，後遺症が残らない，等の諸点が満たされねばならない．1982年以来，左開胸下に，下部食道より左下肺静脈の高さまで，巾約 1 cm の長い食道筋層切除を行い，下部食道括約筋を胃小彎側よりで一個所，確実に切断するが，一切の逆流防止策は付加しない方法を行って来た．その 5 例の術後成績（最長 3 年）について調査した結果，特に進行例に対して著効を認め，また先述した条件をすべて満足させていることがわかった．出来るだけ下部食道括約筋の生理的回復を図ると同時に，長い dysganglionic な食道筋層を切除してしまうところに本手術の特徴があると考えている．